

# PATENT ABSTRACTS OF JAPAN

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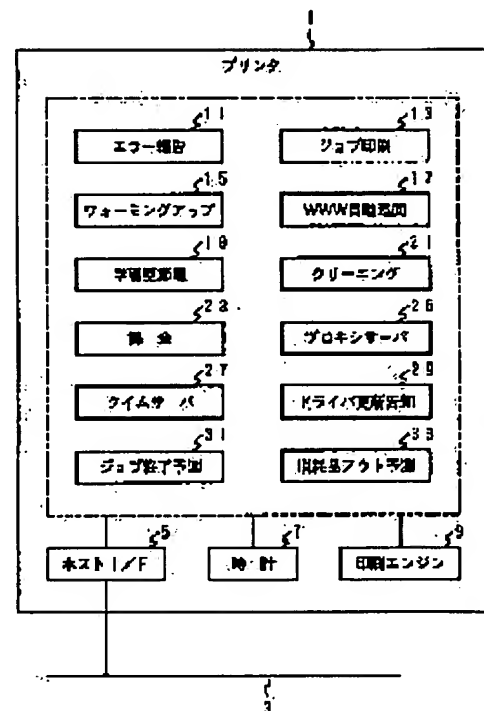
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(54) PRINTER

**(57)Abstract:**

**PROBLEM TO BE SOLVED:** To enhance convenience of a printer by executing a specified operation actively.

**SOLUTION:** The printer 1 is provided with a clock section 7 generating absolute time information indicative of current date, week day and time. Using absolute time information from the clock section 7, occurring time of error is notified along the content thereof and printing time is printed on print results. Turn on power, turn off power, warming up or sleep down of printer are performed at specified times and cleaning interval is controlled such that over cleaning is not performed. Update time of a print driver is predicted and notified to a user, ending time of job is predicted and notified, and the time when consumables, e.g. toner, runs out is predicted and notified.



## LEGAL STATUS

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the printer which prints a document and an image.

[0002]

[Description of the Prior Art] The network printer connected to a network, the local printer by which direct continuation is carried out to a host computer are known. Any printer of a type is the very passive equipment of performing actuation corresponding to it if an electric power switch and the key of a control panel are operated by the user and the influence from the outside, such as delivery \*\*\*\*\*, has the instruction for printing or control from \*\* and a host.

[0003]

[Problem(s) to be Solved by the Invention] If a printer answers influence from the outside and not only operates, but it can say that a function convenient for a user is demonstrated actively, worth of a printer will increase further. For example, even if especially a user does not switch on a power source, it is convenient if you perform starting and warming up actively to suitable timing. It is convenient, if a printer works actively and you reduce a user's time and effort about a maintenance or error processing. It is convenient if it not only prints also about printing actuation as only required by the user, but there is the so-called active function "to use mind."

[0004] Therefore, the purpose of this invention is to offer the printer which performs predetermined actuation actively.

[0005] Another purpose of this invention is to reduce the time and effort of the user about a maintenance and error processing of a printer.

[0006] Still more nearly another purpose of this invention is to realize an active print facility.

[0007]

[Means for Solving the Problem] The printer of this invention is equipped with the clock section which generates the current information which shows time of day absolutely, and the courtesy counter which offers predetermined service which acquired time of day from this clock section absolutely, and used that absolute time of day.

[0008] As service, report (1) error generating with generating time of day, for example. (2) If (3) predetermined time of day which will perform warming up of a printer if the thing and predetermined time of day which add printing time of day to a printing result come comes, will patrol the predetermined server on a network, and will acquire and print predetermined contents. (4) The time amount from the time of the cleaning activation before (5) which learns the time of day suitable for performing powering on of a printer, power off, warming up, or a sleep down, and performs the actuation at the time of day is supervised. The use hysteresis of (6) each user's printer which avoids too frequent cleaning activation is saved. (7) printers which will generate and output accounting information based on use hysteresis if predetermined time of day comes are operated as a proxy server. If the (10) predetermined renewal stage of a driver when a printer outputs current time in response to the notice demand of (8) time of day which checks the oldness of the contents data which are carrying out the

cache, and provides a client with always new contents comes Although it is possible to predict and report the stage whose (12) articles of consumption which output the message about renewal of a printer driver, and which predict and report the end time of (11) jobs are lost etc., it is not necessarily restricted only to this.

[0009] Although this invention can be carried out by computer with a built-in printer, the computer program for it can lead, and can install or load various kinds of media, such as disk mold storage, semiconductor memory, and a communication network, to a computer.

[0010] The printer is equipped with the clock section of this invention however, the printer itself does not have the clock section but you may make it incorporate time of day from the external device to a printer absolutely as deformation typically if needed using the clock section which the equipment besides a printer like a host computer has.

[0011]

[Embodiment of the Invention] Drawing 1 shows the whole printer configuration concerning 1 operation gestalt of this invention.

[0012] A printer 1 is equipped with the host interface 5 which connects with a communication network 3 and communicates with the predetermined node on a communication network 3 (illustration abbreviations, such as a host computer, a print server, and a WWW site), and the printing engine 9 which is the machine device which prints by attaching a coloring agent to a form. Moreover, a printer 1 has the clock section 7 and this clock section 7 generates the information which times time amount and shows the date, the day of the week, and time of day (it is absolutely called the time of day on these specifications) at the current time. furthermore, a printer 1 as a program module performed by the microprocessor (not shown) of printer 1 built-in The error report section 11, the job printing section 13, the warming up section 15, the WWW round section 17, the study mold power-saving section 19, the cleaning section 21, the accounting section 23, the proxy server section 25, the time server section 27, the renewal notice section 29 of a driver, the job termination prediction section 31 And it has the article-of-consumption out prediction section 33, and each of these modules performs various actuation explained below using the absolute time of day when the clock section 7 occurs.

[0013] The error report section 11 notifies the error with generating time of day, when a certain error occurs within a printer 1. Drawing 2 shows actuation of the error report section 11.

[0014] Whenever an error occurs within a printer 1 (step S1), the error report section 11 acquires current absolute time of day from the clock section 7 (S2), and saves the contents of an error, and its error generating time of day at the store (memory or storage) of the volatility in a printer 1, or a non-volatile (S3). If current time is acquired to at any time and (S4) and it become predetermined report time of day (S5), the data of the contents of an error and error generating time of day which transmit the data of the set of the contents of an error and error generating time of day saved until now to the predetermined equipment (for example, predetermined host) of the printer 1 exterior (S7), and have been saved in the printer 1 will be cleared (S8). Moreover, if no contents of an error are saved by report time of day, an errorless purport is notified to the above-mentioned predetermined external device (S9).

[0015] Although it performs the print job requested by the host, if the job printing section 13 has the demand from a user, it will print printing time of day to a printing result. Drawing 3 shows actuation of the job printing section 13.

[0016] If a print job receives a message from a host (S11), the job printing section 13 [ whether it is required that the current banner in which time of day is acquired absolutely (S12), and printing time of day is shown below should be printed from the clock section 7, and ] (For example, whether the command which shows the demand is contained in the print job, or the demand is beforehand set up from the control panel of a printer 1) Or if it checks and (S13) requires whether the demand should be set up beforehand about the class of the print job, the banner which shows printing time of day to the predetermined location (for example, head of the first page) of a form will be printed (S14). Then, if whether it is required that printing time of day should be printed checks also to each page of a print job (S15) and it is demanded of it Whenever it starts printing processing of each page, from the clock section 7, time of day is acquired absolutely (S16), and after [ current ] adding the display of time of day

to the predetermined location (for example, upper margin) of the printing image of each page, (S17) and printing of each page are performed (S18). Steps S15-S18 are repeated about all the pages of a print job (S19).

[0017] If the warming up section 15 becomes the present warming up time of day when time of day was acquired absolutely at and it was specified beforehand from the clock section 7 to at any time as shown in drawing 4 (S21), it will perform warming up of the printing engine 9 (S22).

[0018] If the WWW round section 17 becomes the present round time of day when time of day was acquired absolutely at and it was specified beforehand from the clock section 7 to at any time as shown in drawing 5 (S23), it will patrol some WWW sites where it was specified on the Internet through the communication network 3, will acquire the resource contained in the homepage of these sites, and its homepage, and will print it automatically (S24).

[0019] If the study mold power-saving section 19 learns the time zone when a printer 1 is used and which is not reached and used and becomes the time zone, it will perform the warming up of the printing engine 9, a sleep down (shift to a power-saving condition), etc. in powering on of a printer 1 and power off, and a list automatically. Drawing 6 shows actuation of the study mold warming up section 19.

[0020] If the power source of a printer 1 is switched on by the user (S31), the study mold power-saving section 19 acquires current absolute time of day from the clock section 7, and saves it at the storage of the non-volatile in a printer 1 (S32). At this time, it classifies and saves from a viewpoint to which time zone of the days (for example, time zone of 2-hour width of face) that powering-on time of day is what day of the week for one week, and belongs. Moreover, current time is acquired from the clock section 7 to at any time, and if the powering-on time of day when it was specified beforehand, power off time of day, warming up time of day, or sleep down time of day comes (S33), the warming up of powering on of a printer 1, power off, and the printing engine 9 or the sleep down of the printing engine 9 will be performed (S34). In addition, although it carries out when the printer 1 is turned off [ power-source ], also in this power-source OFF state, the study mold power-saving section 19 obtains slight power from a source power supply or a built-in cell, and, as for powering on, is checking arrival of powering-on time of day. Moreover, whenever a print job receives a message from a host (S35), the study mold power-saving section 19 acquires current time from the clock section 7, the job arrival time of day is also what day of the week for one week, and it classifies it from a viewpoint to which time zone of the days to belong, and is saved at the storage of the non-volatile in a printer 1 (S36). Naturally, powering on by the user is repeated, and arrival of a print job follows on being repeated, and the data number of the powering-on time of day saved until now and job arrival time of day increases. If the data of job arrival time of day are saved to more than the predetermined number (S37), based on these \*\*\*\*\* time-of-day data, the time zone when a print job comes, and the time zone not coming will be statistically determined for every day of the week for one week, and a printer will set up automatically powering-on time of day, power off time of day, warming up start time, and sleep down time of day (S38). For example, powering-on time of day is set up at the time of initiation of the time zone when the high time zone or high print job of frequency a user acts [ a print job ] as powering on may come, warming up time of day is set up at the time of initiation of the time zone when the frequency where a print job comes is high, sleep down time of day is set up at the time of termination of the time zone when the frequency where a print job comes is high, and power off time of day is set up at the time of initiation of the time zone when a print job cannot come.

[0021] Although the cleaning section 21 cleans the printing engine 9 etc. according to a demand of a user, it is controlled not to perform too much frequent cleaning. Drawing 7 shows actuation of the cleaning section 21.

[0022] The cleaning section 21 will acquire current time from the clock section 7, if waiting (S41) and a cleaning demand enter that a cleaning demand enters from the control panel of an external device like a host, or a printer 1 (S43), it compares the time of day when cleaning current time and last time, and confirms whether to have passed beyond predetermined time (S43). If it has passed beyond predetermined time, cleaning of the printing engine 9 will be performed (S46). Cleaning is performed, only when the dialog box for reconfirming whether a purport without the need of cleaning is told and

cleaning is forced is displayed on the control panel of the external device which emitted the cleaning demand, or a printer 1 and the demand of forcing goes into it from (S4), an external device, or a control panel on the other hand, if predetermined time has not passed yet (S46). When cleaning is performed, the activation time of day is acquired from the clock section 7, and it saves at the storage of a non-volatile (S47).

[0023] The accounting section 23 generates the accounting information according to the amount used about the user who used the printer 1. Drawing 8 shows actuation of the accounting section 23.

[0024] Whenever a print job comes and the accounting section 23 performs this (S52), it calculates a user's (or host) account and the amounts of printings of a job (the pagination of a document, number of letters, amount of data of an image, etc.) which emitted the print job, and saves them at the storage of a non-volatile (S54). If current time is acquired from the clock section 7 to at any time (S51) and it becomes predetermined accounting time of day (for example, predetermined time of day of a month end day) (S52), each user's total amount of printings is totaled, the information for accounting is generated, this accounting information will be transmitted to an external predetermined host etc. (S55), and the amount of printings of each saved user will be deleted (S56).

[0025] The proxy server section 25 performs processing for operating this printer 1 as a proxy server. As shown in drawing 9, for example, on an internal network 20 like intranet If clients 21 and 23 emit a contents acquisition demand to the WWW server 41, FTP server 43, etc. on an external network 40 like the Internet a printer 1 -- the acquisition demand -- as a reception proxy server -- the WWW server 41, FTP server 43, etc. -- delivery -- and Once carrying out the cache of the contents data returned from those servers 41 and 43 to auxiliary storage unit 1A, it sends to the clients 21 and 23 of each demand origin. Drawing 10 shows actuation of the proxy server section 25 for realizing such a function.

[0026] If waiting (S61) and a demand come, the proxy server section 25 that the contents acquisition demand by HTTP or FTP comes from clients 21 and 23 If the contents specified by the demand check and (S62) are contained in whether it already goes into auxiliary storage unit 1A, they will acquire current time from the clock section 7, and it is checked old for the acquisition time of day of the contents of opposite *Perilla frutescens* (L.) Britton var. *crispa* (Thunb.) Decne. beyond predetermined time at current time (S63, S64). When it is old as a result, or when there are no contents demanded in auxiliary storage unit 1A at step S62, the acquisition demand is transmitted to the external network 40, and the target contents are acquired from the servers 41 and 43 of relevance, and current time is acquired from the clock section 7, and the set of the time of day and contents is saved at auxiliary storage unit 1A. And the contents are sent to the clients 21 and 23 of a requiring agency (S67). When the check result of step S64 is not old, the contents in the auxiliary storage unit 1A are sent to the clients 21 and 23 of a requiring agency (S67).

[0027] In addition, you may make it change the decision criterion of old decision whether it carries out at step S64 according to the class of contents. for example, the daily newspaper as contents is old if it will leave on the 1st -- old, if it is rich and nothing and week news are formed for one week -- it comes out so that it may be rich and may say that it makes.

[0028] As shown in drawing 11, if it waits and (S71) comes that a time-of-day acquisition demand comes from a host, the time server section 27 will acquire current time from the clock section 7, and will return it to the host of a requiring agency (S73, S74).

[0029] the printer driver of an upgrade product predicts the stage [ homepage / manufacturer / driver ] which comes out, and is come out of and released, and notifies a user of the renewal notice section 29 of a printer driver. Drawing 12 shows actuation of the renewal notice section 29 of a printer driver.

[0030] the renewal notice section 29 of a printer driver -- at any time -- \*\* -- if the updating stages (for example, one month, three months, six months, one year, and two years after the time of the factory shipments of a printer 1 etc.) when current time was acquired at (S81) and it was beforehand specified by the police inspector 7 come, it will notify that a printer driver may be able to update to (S82) and a host (user) (S83). If the notice of a purport which understood the notice is received or it updated from the host (user) (S84), the next updating stage will be specified (S85).

[0031] the job termination prediction section 31 predicts the job end time about a predetermined job (or

all jobs -- related). Drawing 13 shows actuation of the job termination prediction section 31.

[0032] If waiting (S91) and a demand come, the job termination prediction section 31 that an end time prediction demand of the appointed job (or all jobs) comes from a host etc. Time amount required to terminate all the jobs to the appointed (or the last) job from the job of the activation schedule of the degree included in time amount and a queue required to terminate a current active job is predicted and totaled (S92). Job termination prediction time of day is computed by adding this sum total duration to current time from the clock section 7, and the host of a requiring agency is notified of this prediction time of day (S93).

[0033] The article-of-consumption out prediction section 33 predicts the stage whose articles of consumption included in a printer 1, such as a toner, ink, and a form, are lost. Drawing 14 shows actuation of the article-of-consumption out prediction section 33 (although a toner is taken to a ream as an article of consumption, other articles of consumption are the same).

[0034] Each time when the article-of-consumption out prediction section 33 performs a print job (S102), Calculate the amount of the toner consumed by the job (S103), and current time is acquired from the clock section 7 (S104). Using the toner specific consumption of the time of the last job activation, the toner consumption in this job, and current time, the new toner specific consumption (for example, per day or toner consumption per week) M is calculated, and it saves at the storage of a non-volatile (S105). If the prediction demand of a toner out stage comes from a host etc. (S101) Calculate the current toner total residue (S106), and a period (days or the number of weeks) until it breaks by the toner specific consumption M which has saved this total residue and a toner is lost is searched for (S107). A date is predicted until it adds this period to current time from the clock section and a toner is lost, and it reports to the host of a requiring agency (S108, S109).

[0035] Moreover, it may be made to forecast before fixed time amount (for example, one week) from the lost day. This has the following merits as compared with the conventional toner-less forecast. That is, in the conventional technique, the residue of a toner is supervised and a forecast is emitted in the phase in which the residue turned into a constant rate. Therefore, although a forecast is emitted before very, for example, several weeks, by the printer with little amount used from the day whose toner is lost, since a forecast is emitted just before the day whose toner is lost by the printer with many amounts of printings (for example, the previous day), it is difficult [ it ] to prepare toner supply to the optimal timing as a user (for example, one week before). On the other hand, with this operation gestalt, since it predicts in consideration of the amount of the printer used and a forecast can be emitted before \*\*\*\* a suitable period, for example, one week, from the day whose toner is not concerned with the amount of the amount used but is lost, it is easy to make preparations for a user.

[0036] As mentioned above, although 1 operation gestalt of this invention was explained, this operation gestalt is the instantiation for explanation of this invention to the last, and is not the meaning which limits this invention only to these operation gestalt. Therefore, this invention can be carried out also with various gestalten other than the above-mentioned operation gestalt.

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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] The block diagram showing the configuration of 1 operation gestalt of this invention.

[Drawing 2] The flow chart which shows actuation of the error report section 11.

[Drawing 3] The flow chart which shows actuation of the job printing section 13.

[Drawing 4] The flow chart which shows actuation of the warming up section 15.

[Drawing 5] The flow chart which shows actuation of the WWW round section 17.

[Drawing 6] The flow chart which shows actuation of the study mold warming up section 19.

[Drawing 7] The flow chart which shows actuation of the cleaning section.

[Drawing 8] The flow chart which shows actuation of the accounting section 23.

[Drawing 9] The block diagram showing the example of connection when using a printer 1 as a proxy server.

[Drawing 10] The flow chart which shows actuation of the proxy server section 25.

[Drawing 11] The flow chart which shows time server section 27 actuation.

[Drawing 12] The flow chart which shows actuation of the renewal notice section 29 of a printer driver.

[Drawing 13] The flow chart which shows actuation of the job termination prediction section 31.

[Drawing 14] The flow chart which shows actuation of the article-of-consumption out prediction section 33.

[Description of Notations]

1 Printer

7 Clock Section

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[Translation done.]



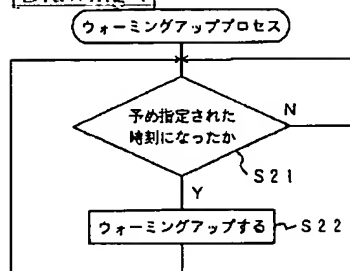
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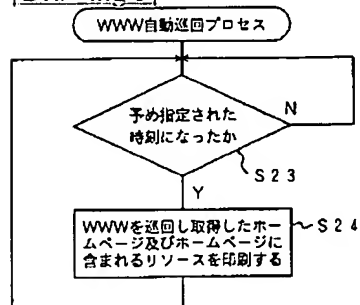
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## DRAWINGS

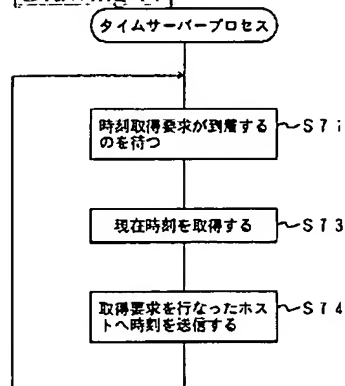
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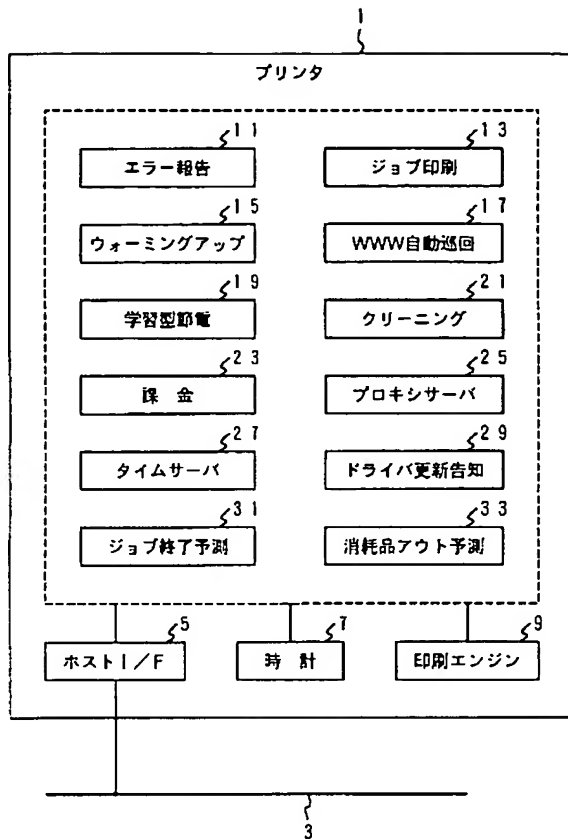
[Drawing 5]



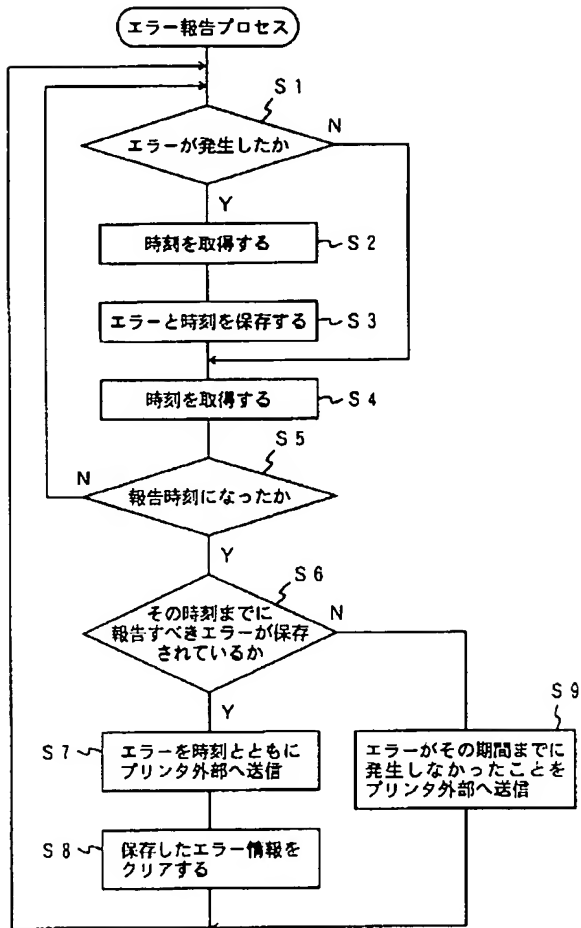
[Drawing 11]



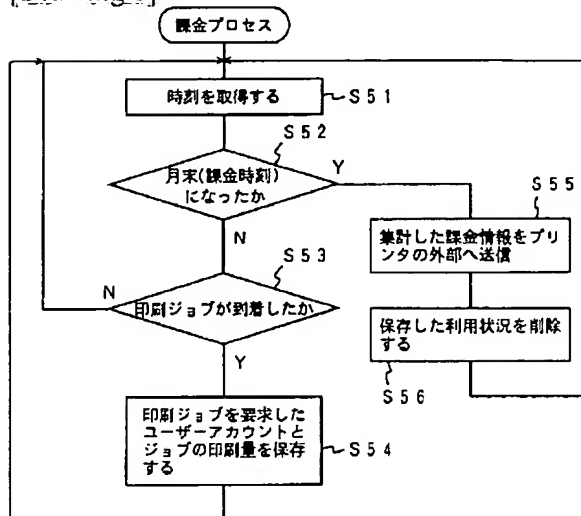
[Drawing 1]



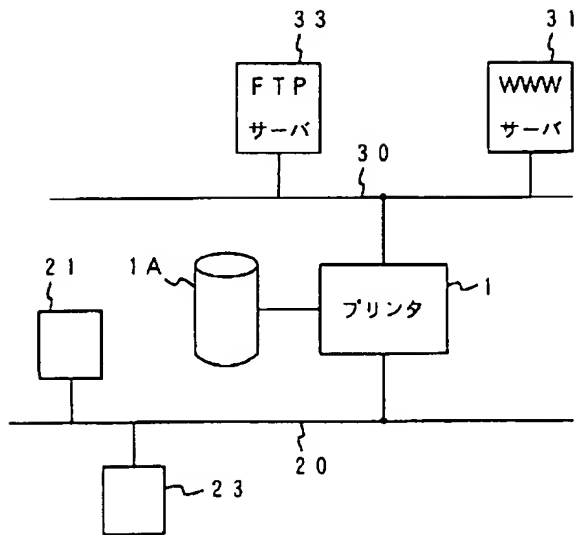
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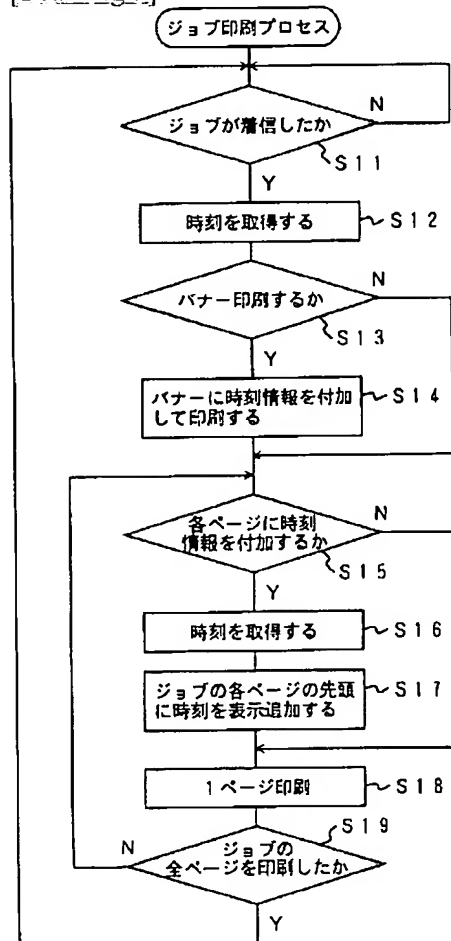
[Drawing 8]



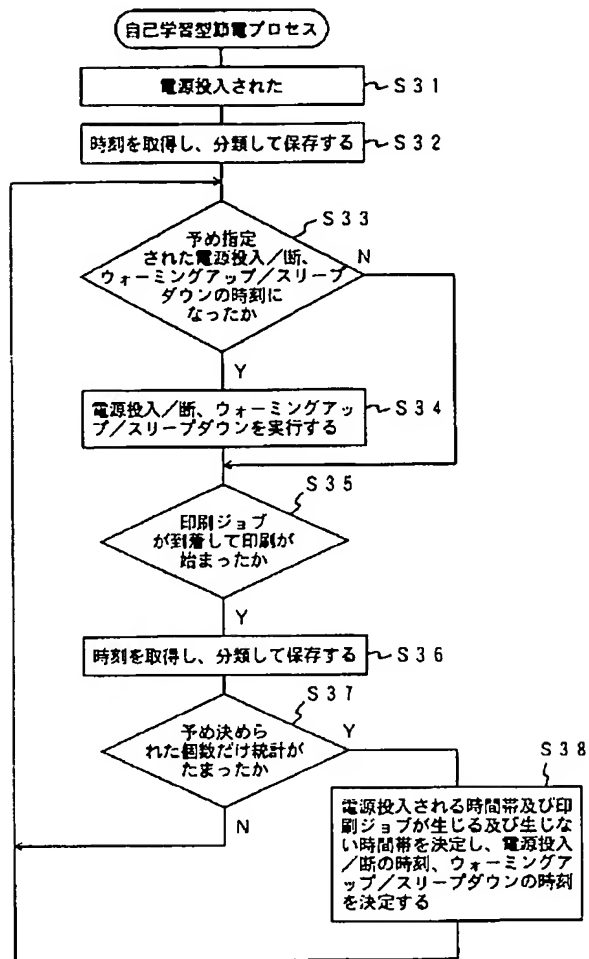
[Drawing 9]



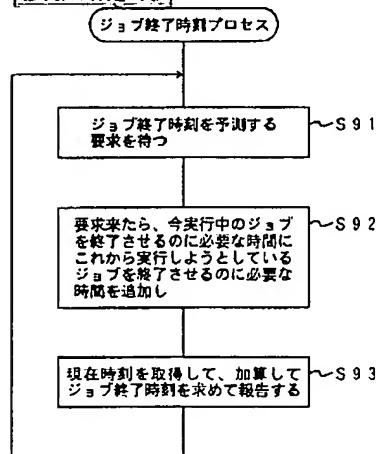
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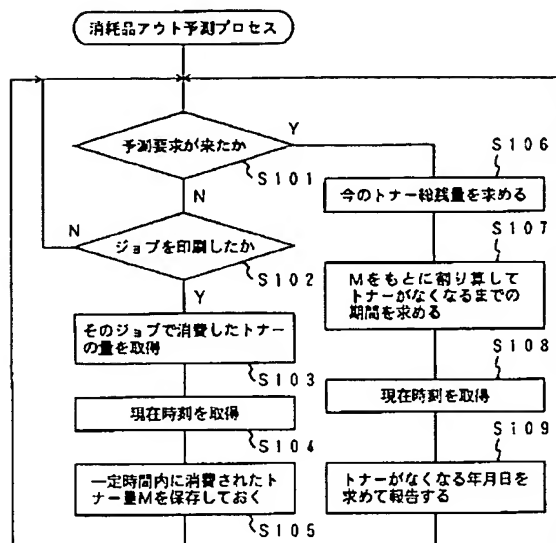
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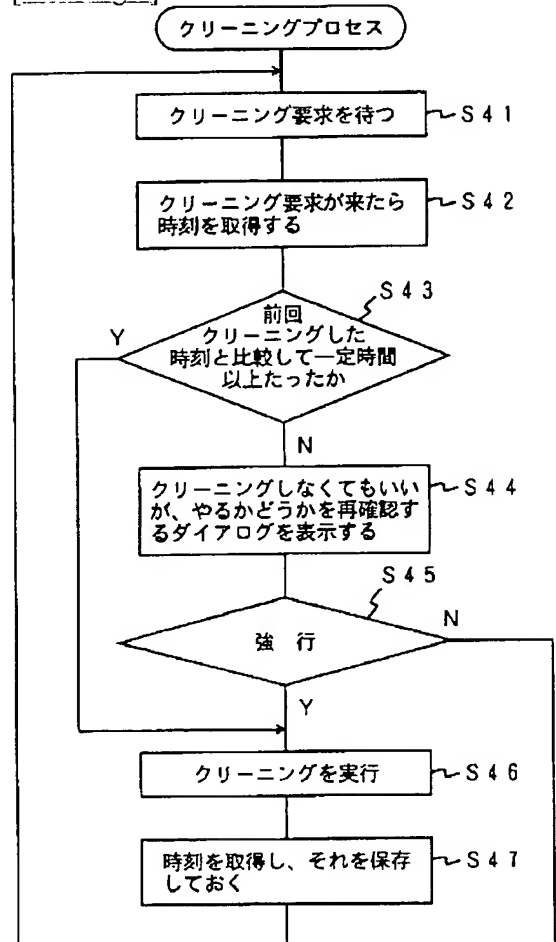
[Drawing 13]



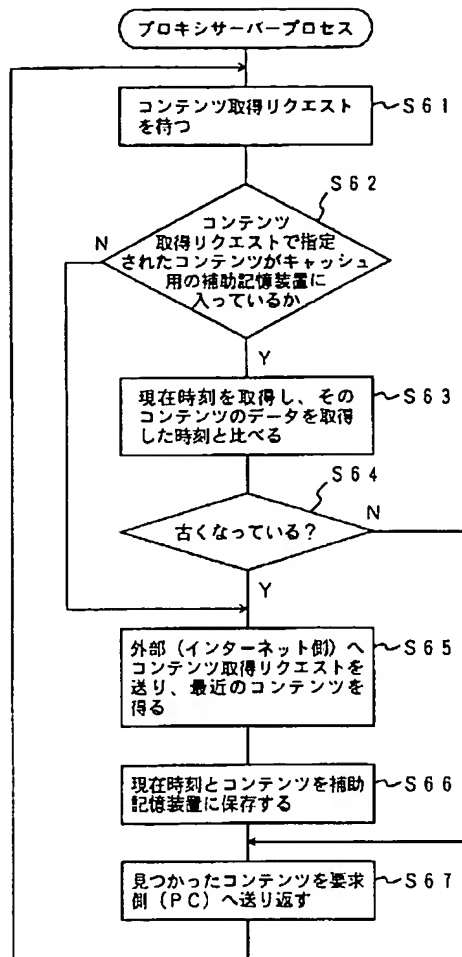
[Drawing 14]



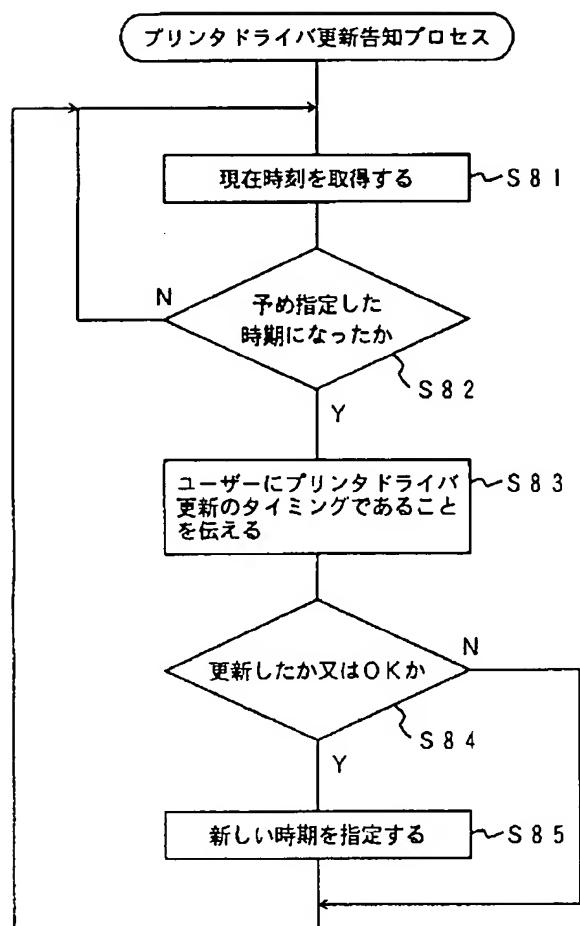
[Drawing 7]



[Drawing 10]



[Drawing 12]



[Translation done.]